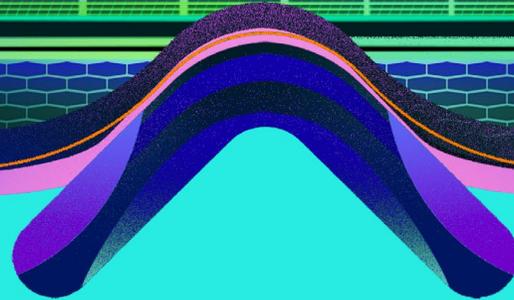


RESEARCH

# Retooling R&D



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<b>Welcome Letter from Wazoku</b>	<b>3</b>	<b>New Tools and Methodologies</b>	<b>27</b>
<b>Executive Summary</b>	<b>6</b>	<b>Executive Perspective: Kimberly-Clark</b>	<b>28</b>
<b>How Did the R&amp;D Budget Change?</b>	<b>10</b>	<b>New Pressures and Expectations</b>	<b>30</b>
<b>Comments: Why Did the Budget Change?</b>	<b>11</b>	<b>Executive Perspective: Comcast Labs</b>	<b>31</b>
<b>Executive Perspective: 3M</b>	<b>13</b>	<b>Organizational Support (and Lack Thereof)</b>	<b>33</b>
<b>Most Important Outcomes</b>	<b>15</b>	<b>Comments: Organizational Support</b>	<b>34</b>
<b>Executive Perspective: W.L. Gore</b>	<b>16</b>	<b>Executive Perspective: Campbell Soup Company</b>	<b>36</b>
<b>Science and Technology: Areas of Interest</b>	<b>18</b>	<b>Advice on Delivering Value</b>	<b>38</b>
<b>Executive Perspective: Agent Capital</b>	<b>19</b>	<b>Executive Perspective: Hain Celestial Group</b>	<b>45</b>
<b>Open Innovation Moves Into the Mainstream</b>	<b>21</b>	<b>About the Respondents</b>	<b>47</b>
<b>Comments: Open Innovation</b>	<b>22</b>	<b>About Wazoku</b>	<b>50</b>
<b>Focus of Open Innovation Activities</b>	<b>24</b>	<b>About InnoLead Research</b>	<b>51</b>
<b>Executive Perspective: Kellogg Company</b>	<b>25</b>		



**Simon Hill**  
**CEO**  
**Wazoku**

**T**he passing of one year and the arrival of another is a natural time to both look back and reflect, and look forward to a future we are yet to create and experience. Through this report, we are certainly looking to do both, to understand where we are launching off from into 2022 and what the context for this new year is for our innovation, R&D, strategy, and broader businesses. The general sentiment seems to be cautiously optimistic, but the spectre of uncertainty is never far away in these times.

Personally, I am looking ahead to 2022 with optimism and positivity. I believe that this is a year in which Positive Transformation and Positive Impact will come to the fore, aided by the growing expansion of our open innovation efforts in all aspects of our business lives. As we look to bounce back from the tragedy and challenges of the past two-plus years, the tools of innovation will be critical, and those who get it right will emerge stronger, more agile, and future fit for what is undeniably an exciting, complex, and fast-moving world ahead of us.

I see a number of trends gaining significance this year. As global enterprises, we need to embrace agile innovation to support our teams in adopting the tools of innovation across every team and empower them to draw on the power of open innovation, co-creation, and open talent. To achieve this, we need to evaluate the skills, structures, and tools we have in place to ensure we are efficiently and effectively enabling innovation at scale.

The tools of innovation are becoming increasingly critical to our organizations' ability to meet the demands of both today and tomorrow; to accelerate our digital transformation

## **“Innovation must be a collective and interconnected set of shared objectives and key results across the C-suite.”**

journeys; to meet the environmental and sustainability pledges we are making aligned to the global climate imperative; to create new jobs and ways of working that embrace the global talent pool in an open and inclusive way; and so much more.

As the research in this report highlights, we are all “being asked to do more with less,” which places an emphasis on us all to be as effective and efficient with the resources we have. If we are all truly honest on this, we know that right now, our current innovation processes are highly inefficient.

Additionally, it is no secret that “talent is tight.” We need to be smarter and more creative about how we think about talent, about the way work, and how we resource our initiatives. These two points are tightly interlinked. Looking at the challenges and focus areas this report highlights, I believe we need to step back and look honestly at how we are enabling and empowering our organizations to do the things we are asking of them. Innovation must be a collective and interconnected set of shared objectives and key results across the C-suite.

In order to achieve this, you need the tools in place to allow you to centrally and reliably view, measure, and report on your entire portfolio of activity, from the grass-roots to the next game changer. The evidence shows that across our organizations we are doing a lot, but too often it is in silos. By not connecting these dots and data points, we are wasting billions of dollars in investment, time and opportunity.

But even with the right tools in place, I believe there is still one more critical component required for innovating at scale successfully: the public sponsorship and support of the CEO.

**“The primary purpose of a corporation is not about maximizing sales or profits, but about the problem the company is solving for and its role in society today.”**

The most compelling leaders are those who are deeply committed to the purpose of their corporation. The primary purpose is not about maximizing sales or profits, but about the problem the company is solving for and its role in society today. They are emotionally engaged with the corporate purpose, and they can instill this same level of engagement and commitment to achieving the Positive Transformation and Positive Impact that we need to thrive despite the environmental, social, and business challenges we are facing.

We are optimistic for the future and we believe that through truly enabling collective intelligence, we can accelerate our innovation outcomes, build back stronger, faster, and positively impact the lives of billions of people around the world as we do so. Here’s to a great 2022. Here’s to changing the world, one idea at a time!

—Simon Hill, CEO

**WAZOKU**



**A**midst stressful and unpredictable business and societal conditions related to the on-going COVID-19 pandemic, R&D organizations are feeling new pressures. They are trying to fill gaps on their team in a tight talent market; solve problems with essential company operations while also building for the future; bring on new vendors when existing ones are unable to deliver; and deliver more output with the same resources – or in some cases, less. While R&D teams may have figured out a hybrid work model, many still report feeling isolated from their customers or end users.

To shed light on these dynamics, and understand how Global 1000 companies can productively address them, we fielded a survey of R&D professionals in Q4 2021 and also conducted a series of qualitative interviews. We received 78 qualified survey responses; 79 percent of our survey respondents were at the director level or above in their organizations. Sixty-seven percent of respondents were based in North America, and just over one-quarter in Europe.

## **Budget is Not the Biggest Issue**

Financial support for R&D seems to be holding steady. Just eight percent of our respondents said that in the current fiscal year, their budget had been cut. Half said it had increased, either “significantly” or “somewhat.” At nearly 40 percent of companies, the budget remained stable. One respondent explained, “There is a pressure for cost reduction, but with a changing market environment, innovation is a must, so basically both factors cancel each other and the budget remained roughly the same.”

## Weakest Support: Finance and HR

Survey respondents said that their strongest internal supporters are the CEO, COO, or key business unit chiefs, followed by the board of directors. As one respondent put it, the CEO and board “understand that if we don’t invest in innovation, we die.” We found that the two least supportive functions, according to R&D professionals, were human resources and finance, followed closely by marketing. Bureaucracy, short-term objectives, and lack of alignment were frequently cited as creating friction. “We do not use HR or the recruiting team,” one respondent wrote. “We do our own hiring, due to past poor experiences.”

## The Most Important Outcomes

When we asked about the most important R&D and innovation outcomes, in the eyes of senior leadership, three things floated to the top of the list:

- Getting new products, services, or internal tools deployed or into the market

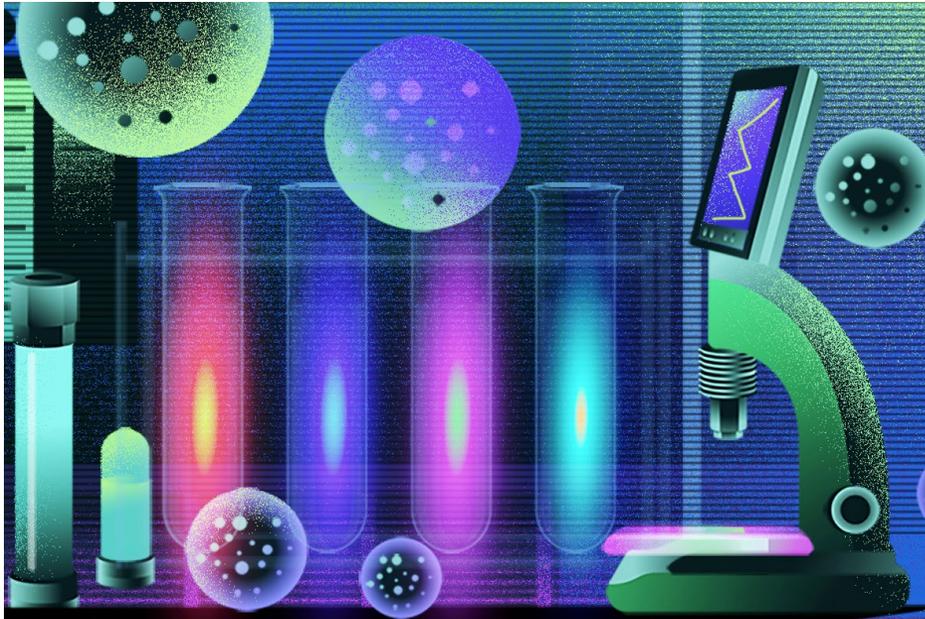
- Monitoring potentially important technologies or science
- Finding ways to generate incremental revenue.

Senior leaders want to see continual and clear evidence of business contributions from their R&D groups, not simply “scouting, scanning, and experimenting.”

## Areas of Biggest Interest

While many survey respondents said that they were active in exploring very industry-specific topics like “magnetic levitation” (transportation industry) or “genotyping and assay development” (agriculture industry), there were a set of themes that are attracting broad interest across industries:

- Artificial intelligence and machine learning
- Sustainability and the circular economy
- Digitization and personalization
- New food ingredients and alternative proteins
- Augmented reality, virtual reality, and the “metaverse”
- Blockchain



- Internet of Things & Industrial IOT
- Robotics and automation
- Analytics & data mining
- Electrification and new battery technologies.

## **Open Innovation is Becoming Standard Operating Procedure**

Once considered an experimental tactic, a public relations splash, or perhaps a “last ditch” effort when solutions didn’t emerge internally, open innovation is on its way to becoming standard operating procedure in R&D organizations. Forty-five percent of respondents said they turn to external sourcing on a regular basis, and another 40 percent say they do so sporadically. Just 14 percent said they haven’t run an open innovation program, or are not sure – and of those, 10 percent are considering it. “Statistically speaking, no matter who you are, the best and brightest exist outside of your organization,” one respondent wrote. When there are barriers, they are often cultural, or erected by a particular individual: “the CTO has a strong ‘not invented here’ mindset, and prefers homegrown solutions,” another respondent explained.

**“Our CEO and board understand that if we don’t invest in innovation, we die.”**

Most commonly, open innovation is being used for early-stage research and scouting; product-specific R&D; or identifying partners.

## **New Pressures, New Approaches, and Advice**

The report also includes verbatim comments from our respondents on new pressures they are experiencing, new approaches they are trying, and advice on delivering more value to the organization. “If you are charged with innovation, truly listen to your customers and really focus on their ‘problems to be

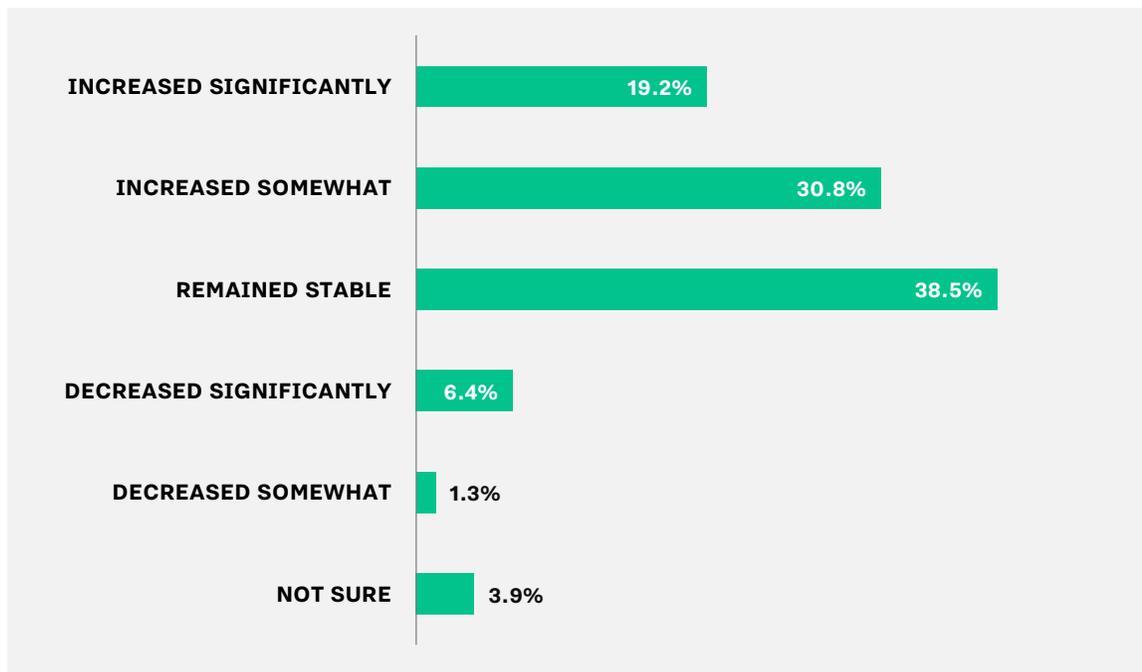
solved’ versus your existing ‘products to be sold,’” advised one respondent.

Judi Mondello of Campbell Soup Company told us that the big challenge for R&D organizations, in 2022 and beyond, “will be how do you drive growth beyond the core — because it’s expensive to go outside of your core business and drive growth in a meaningful way.”

At 3M, Cordell Hardy said that in his view, R&D has always been more about perspiration than inspiration: “It’s absolutely necessary to have the grit and dedication; to go all the way through the finish line; to manage all the risks and overcome the failures. It’s been my experience that that is lot of work.”

The full report that follows will give you a sense for how your peers at other large organizations are focusing their efforts.

**For the current fiscal year, what happened to the budget and human resources dedicated to R&D/innovation activity in your organization?**



The COVID-19 pandemic did not trigger a major earthquake in financial commitment to R&D, at least in our respondent set.

Half of the respondents are seeing an increase in budget and staffing, while another 40 percent are living with the status quo. In those organizations, COVID uncertainty is still making it challenging to obtain additional resources.

In organizations where budget has been increasing, that same uncertainty is driving new investments, according to some respondents, who say that their C-suite sees the need to “retain talent and invest now for payoffs later” or “ensure a robust pipeline in the future.”

The common thread among R&D teams attracting more resources: they are seen as helping address customer needs, delivering new products, and keeping the company competitive. More comments from respondents appear on the following pages.

We invited respondents to share additional detail about what was behind the changes in their budget.

 <p><b>INCREASED SIGNIFICANTLY</b></p>	<p>“Land grab in the Metaverse...”</p> <p>“Large shift in industry direction, and new entrants to the marketplace [are] better able to leverage new technology to offer innovative customer solutions.”</p> <p>“Pace of change in the automotive industry / level of investment in future mobility solutions broadly.”</p>	<p>Media &amp; Telecom</p> <p>Financial Services</p> <p>Automotive, Transport &amp; Logistics</p>
 <p><b>INCREASED SOMEWHAT</b></p>	<p>“Our R&amp;D budget was increased slightly, but refocused to support our customers in several key decarbonization areas.”</p> <p>“Upward pressure on salary needs. Much broader recruitment pool based on ‘work from home’ effect of COVID-19.”</p> <p>“We take a cautious approach to growth in R&amp;D, because when we hire quickly and without proper screening, we don’t get good results.”</p>	<p>Energy &amp; Utilities</p> <p>Medical Devices &amp; Instruments</p> <p>Technology</p>

# Comments: Why Did the Budget Change?

 <p><b>REMAINED STABLE</b></p>	<p>“There is a pressure for cost reduction, but with a changing market environment, innovation is a must, so basically both factors cancel each other and the budget remained roughly the same.”</p> <p>“We had planned an increase in R&amp;D resources (technology investment/research dollars), however, due to the impacts of attrition and a difficult hiring market, we have decided to keep the same year over year budget.”</p>	<p>Consumer Goods / Consumer Products</p> <p>Aerospace &amp; Defense</p>
 <p><b>DECREASED SOMEWHAT</b></p>	<p>“Company performance &amp; reorganization.”</p>	<p>Consumer Goods / Consumer Products</p>
 <p><b>DECREASED SIGNIFICANTLY</b></p>	<p>“[Challenging] working environment during an on-going pandemic. Supply chain challenges: getting new equipment, materials for testing, etc. Labor shortages.”</p>	<p>Consumer Goods / Consumer Products</p>



Cordell Hardy  
Senior Vice President of  
R&D Operations  
**3M**

**E**merging trends. The industry trends that are relevant to my team are the same that are relevant to the entire company. The emphasis on competitive product performance and value proposition is the same as it has always been. Customers buy first on that. However, a very strong trend – and I’m sure this is true for every manufacturer – is around lifecycle management and sustainability.

Since 2019, all 3M products have had a sustainability commitment. ...Increasingly, our customers are looking for this. It’s one thing to say, “We produce this with few emissions or recycled materials.” And that’s great. But another trend is our products fitting into manufacturing processes or designs or usage patterns that increase the sustainability footprint for our customers themselves. That’s a different conversation. That means you have to be thinking about how your customer or user is going to use the product, what workflow they engage in, and what their sustainability concerns may be.

**The impact of R&D on revenue and profit.** At best, I’d say anything we point to is going to be an indirect measure. If we have an interaction with a customer at our center and we then start to track, “OK, we talked with person X about so many rolls of multilayer optical film into their smartphone design.” There are hundreds of other people involved in that who have nothing to do with our group. ... All we can do is point in the direction and say, “Hey, we are integrated into the value creation process.” But we’re not independent. We’re additive.

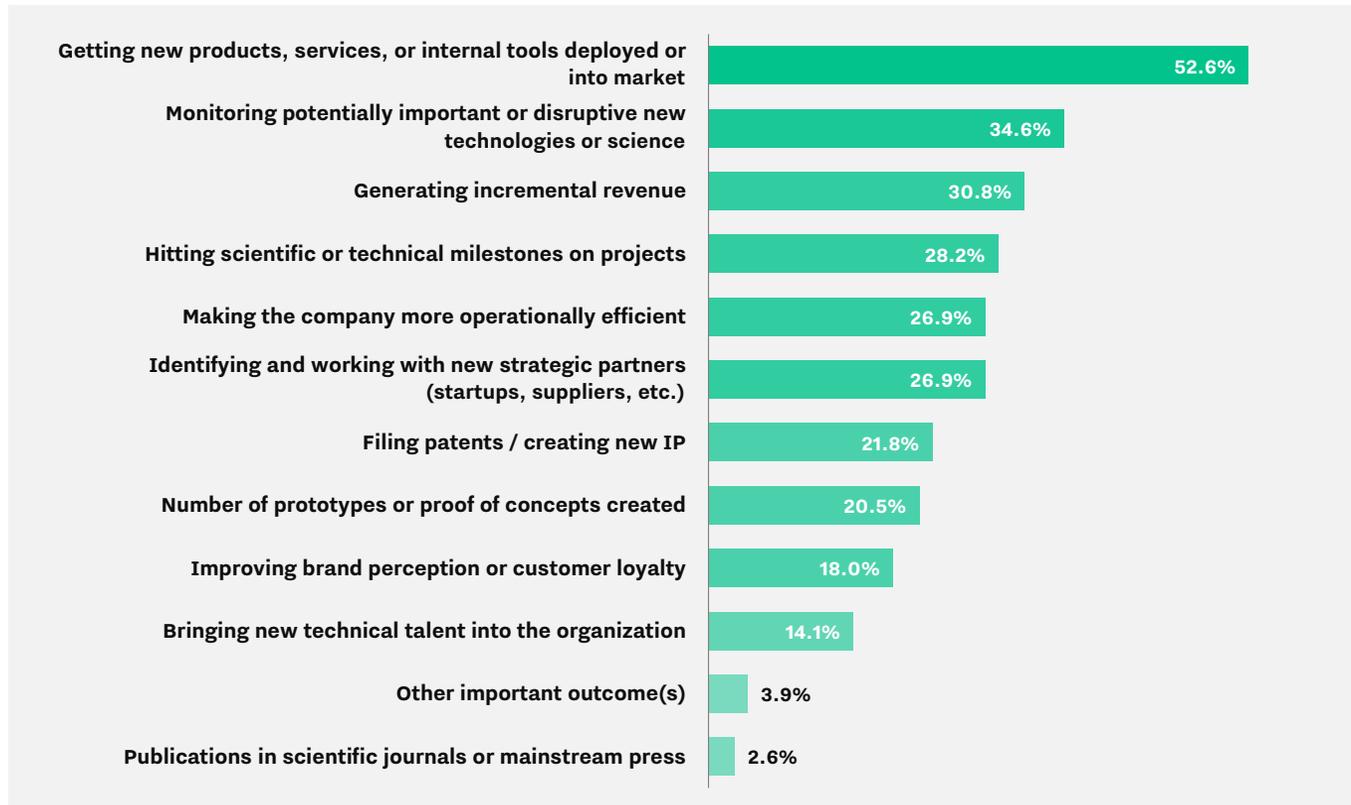
**“You have to be thinking about how your customer or user is going to use the product, what workflow they engage in, and what their sustainability concerns may be.”**

**Organizational structure.** I manage a group called corporate R&D operations. This organization was created about two years ago, as 3M transitioned to a new operating model. For a long time, we’ve had individual business units, divisions that sell different portfolios. ... We’ve gone away from that structure to empowered business groups. Now, the business group presidents are in a lot more control of their organizations.

**Is R&D work about inspiration, or perspiration?** I think both have to be true. But if you were to push me and say you have to lean toward one or the other, I would offer that it’s primarily perspiration, not inspiration. Good ideas — I could probably list off 10 good ideas for you in the next five minutes and create not a penny.

It’s absolutely necessary to have the grit and dedication; to go all the way through the finish line; to manage all the risks and overcome the failures. It’s been my experience that that’s a lot of work.

In the eyes of your senior leadership, which of these are important outcomes your team is expected to deliver? (Respondents could check up to three answers.)



Senior leaders view R&D and innovation-oriented teams as having one paramount mission: get new products or services into the market, or new tools deployed internally. Behind that, they are expected to keep an eye on potentially important areas of emerging technology or science.

While senior leaders may not be as focused on how the R&D team recruits new talent into the organization, that work underpins all of the other activities that appear higher up in this chart.

Two of the “other important outcomes” mentioned by respondents (second bar from the bottom at left) were helping to position an organization as the center of a multi-party “innovation ecosystem,” and also the “creation of new technology for new or adjacent markets.”



Greg Hannon  
Chief Technology Officer  
**W.L. Gore**

**O**ur current focus. From an R&D perspective, our current innovation focus is on the following megatrends of health care, sustainability, and electrification. We've done a lot of external research looking to see where the next decade will play out. We've partnered with companies like Institute for the Future to try to get some future visioning on where markets will be going, and using that to guide our R&D investments.

**Measuring our work.** Our primary measure is called the portfolio health index, which I believe came from Gartner. It's a subjective assessment of your innovation portfolio based on six different questions that you grade yourself on.

What we tend to do for performance indicators, KPIs, is measure for execution for a subset of our portfolio. Are they delayed, or are they hitting their timeline? We also look at overall portfolio value. Is it increasing or decreasing over time? Then we measure the vitality index, which is the revenue created from products introduced over the last X number of years. And we report these measures to our board of directors every quarter.

**Hiring.** Hiring today is probably challenging for most companies.... People don't necessarily want to relocate like they once did. From an R&D perspective, you need to be in the lab, you need to be together, you need to be in the plant, which has been a challenge through the pandemic. ...When [new hires] do come in, they don't have the same level of access to the facility, so it makes it more challenging in the onboarding process.

**“Our primary measure is called the portfolio health index... It’s a subjective assessment of your innovation portfolio based on six different questions that you grade yourself on.”**

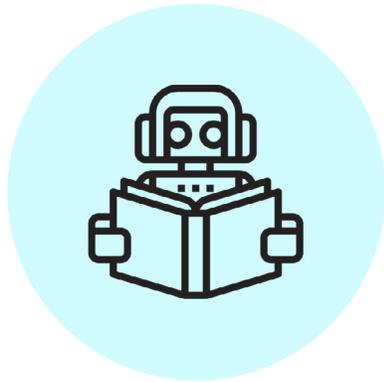
**External partnerships.** Over the last decade, we’ve become much better at external partnerships. We’ve had multiple efforts with a university in Munich, and locally the University of Delaware here, as well as others. A lot of these [partnerships] are around how can we move more quickly. How can we accelerate our efforts? How can we move forward more quickly without having to build all the capability internally?

We have a Silicon Valley innovation center, which is kind of an innovation outpost in California, whose primary focus is really to be our eyes and ears locally in that San Jose area.

**The impact of IT.** The amount of information you can get can be overwhelming. But...if I want to start a project, I can go back to find out if it’s been done before quickly. As opposed to starting a project and a couple of months into it saying, “Hey, I remember someone did that 30 years ago.”

Information technology has really helped. We’re starting to do things a little bit more with machine learning and AI to study material sets, do more predictive modeling. I think it’s making us better as an organization — and stronger.

What areas of technology or science are you actively exploring? (Size of icons equates to number of mentions.)



Artificial Intelligence & Machine Learning



Sustainability & Circular Economy



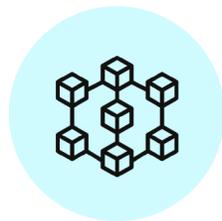
Digitization



New Food Ingredients & Alternative Proteins



Augmented Reality & Virtual Reality



Blockchain



IOT & Industrial IOT



Robotics & Automation



Analytics & Data Mining

## Additional Areas of Interest

- Electrification and new battery technologies
- Quantum-based encryption and communication technologies
- Digital twins
- Nanomaterial science
- Point-of-care PCR technology
- 3D printing/additive manufacturing
- Voice-driven interfaces



John Orloff  
Venture Partner  
**Agent Capital**;  
former Head of R&D  
**Alexion Pharmaceuticals**

**A**ccelerating clinical trials. When you look at the pandemic, in many ways it did accelerate the adoption of various digital technologies that support what we call decentralized clinical trials – using telemedicine, sensors, home health services, mobile apps, and wearable devices for remote monitoring. The pandemic forced that, because patients couldn't come into the medical centers. We've been talking about this for many years – including the need to tap into patients in remote areas, who don't traditionally participate in clinical trials, because they don't have access to an academic or tertiary care center.

A lot of companies are continuing in that trend, using those methods and tools, because it's a more efficient way. We tap into the 95 percent of patients who don't currently participate in clinical trials, and that can greatly accelerate our ability to conduct trials.

**Scouting new science and technology.** I don't really think we need brick-and-mortar meetings to go to to stay abreast of the latest developments these days, with the web and Zoom and other means. [At Alexion, we had] a team of scientists on our business development team – probably 12 people – that were just scouring the internet and publications and press releases and presentations at congresses, to reach out and gain a better understanding of what these companies are doing, and then finding competitor startups in the same space.

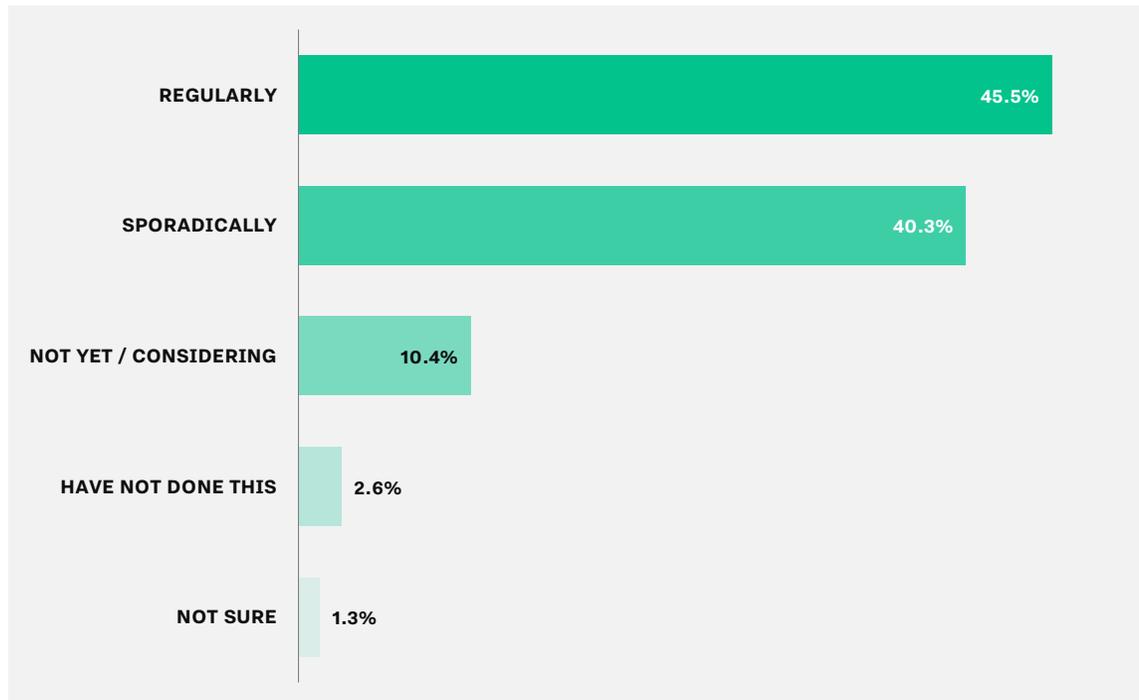
**“As humans, we have limitations in being able to integrate and synthesize and look at data. I think AI and machine learning technology will allow us to make better decisions and choices...”**

**Artificial intelligence and machine learning.** As humans, we have limitations in being able to integrate and synthesize and look at data. I think AI and machine learning technology will allow us to make better decisions and choices, and give us new insights into how to approach certain diseases. [At

Alexion, we] also applied AI and ML to the operational aspects of the business. We developed an algorithm for our COVID-19 therapeutic trial, because we wanted to chase the pandemic [and find regions where the virus was most active.] For other trials, we wanted to avoid it. [Those algorithms] helped us to determine which sites would be most affected and have difficulty enrolling patients.

**Startups and BigCos.** With the explosion of cloning the human genome, and understanding how that connects better to disease, biology, and physiology – a lot of that is happening in academia or startups, outside of big pharma research. And there is a steady flow of talent out of big pharma into smaller companies. [Going forward,] you need to have smart people in your R&D and business development organizations, because when you partner [with academic labs or startups], your role isn't designing the studies or executing the studies; you're providing input. That's a very different role, and sometimes it's frustrating. You might do it a different way, but you have to be collaborative.

**To what extent does your team practice “open innovation” by sourcing ideas from customers, entrepreneurs, inventors, or academics outside of your organization?**



Sourcing ideas externally has become an important part of the R&D playbook. The vast majority of organizations say they do it regularly or sporadically as a way to find key building blocks for their future product offerings.

“Exogenous ideas and pressures are critical to remaining at the forefront of innovation,” wrote one respondent in the energy and utilities sector.

But internal bias against external ideas – often seated in particular individuals – keeps some organizations from practicing open innovation more regularly and effectively, as do concerns about exposing company secrets.

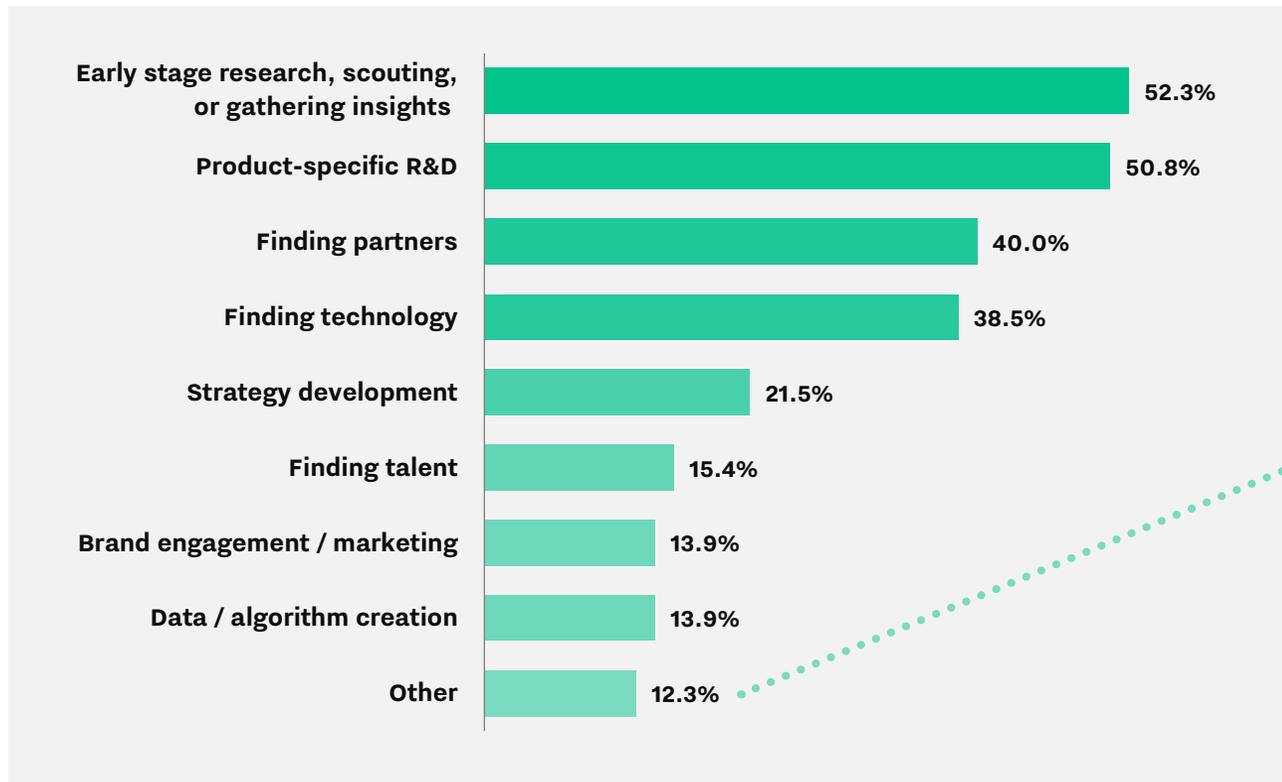
More comments appear on the following pages.

We invited respondents to share additional detail about why their organizations practice open innovation —or why not.

Practice Open Innovation Regularly	“We are very active with defense science and technology research organizations such as DARPA, IARPA, ONR, AFRL, and ARL.”	Aerospace & Defense
	“Statistically speaking, no matter who you are, the best and brightest exist outside of your organization.”	Consumer Goods / Consumer Products
	“This is an area where constant improvement is necessary. Exogenous ideas and pressures are critical to remaining at the forefront of innovation. This is even more true as we consider innovations that must integrate with other innovations (rather than incumbent technology) — we must have a strong awareness of external trends to be successful.”	Energy & Utilities
	“We start from a blank whiteboard and drive process forward to make ideas tangible....so you have to be open and nimble.”	Professional Services

Practice Open Innovation Sporadically	“We do not have a setup in place to encourage open innovation, plus we still have to fight the resistance to the perceived risk of losing know-how / insights by bringing in people external to the organization.”	Consumer Goods / Consumer Products
	“The topic occasionally comes up with prospective partners, however the CTO has a strong ‘not invented here’ mindset and prefers home-grown solutions.”	Healthcare
	“It is done sporadically, because previously-recommended ideas from outside sources have been ignored when proposed to management.”	Medical Devices & Instruments
	“Tried starting up OI programs with moderate success. COVID caused challenges in pilot program implementation, but [we are] looking at how we might roll it out to a more global population in 2022.”	Pharmaceuticals & Life Sciences
Not Yet / Considering	“I’m new in the organization but I don’t see a lot of collaboration with suppliers on innovation yet; [there’s] always concern about sharing info beyond the company bounds.”	Consumer Goods / Consumer Products
Have Not Done It	“A combination of a strong internal R&D [capability] and a ‘not invented here’ culture.”	Consumer Goods / Consumer Products

If your organization has run open innovation challenges, what has been their focus? (Respondents could check all that applied.)



Rather than cast a wide net for potential partners, technologies, or talent, we found large organizations using open innovation to look for elements or solutions related to specific products (#2 at left), or for early-stage research and scouting to understand a nascent area of science or technology, or a new customer dynamic or trend (#1 at left.)

#### “Other” Responses:

- Predicting future customer needs.
- “Mostly it has been internal-facing, focused on employee morale boost.”
- User experience innovation.
- Strategic investments.



Nigel Hughes  
Senior Vice President,  
Global R&D  
**Kellogg Company**

**T**racking ingredient innovation. Two or three years ago, it looked like the whole food world was going to be all startups. It was like 1996 and the dot-com boom. We know what happened after that, when a lot of those companies didn't exist anymore.

I'm not suggesting that the role of startups in food and Kellogg Company food systems isn't significant; it will continue to be. But two or three years ago, virtually every startup was a branded food startup. What has changed is a huge flip toward food ingredient startups. That is really important for us. If anything has happened in our agenda in the past few years, the pressure on inflation and the robustness of our supply chain mean that we have had to go back and be sure we're as clear as we can be on our core technology basis – driving the value of the assets we've got, and future proofing them.

If you take an area like plant-based protein, we now can see a map to a complete cost reframe on plant-based protein. You've got soy protein, and you're improving the cost through AI-driven plant breeding programs. Then you've got people on the front edge, who are working on fermented proteins and the like. Our core skill is food design, but how can we track to the accessible price point for those technologies? [We want to be able to say that] in one year's time, we can introduce this benefit to that food, because the cost profile will be right. Or, in three years time, we'll be able to introduce it to this food.

**New approaches to testing.** Our consumer testing completely changed. We're mass sourcing consumer input. We're not doing as much in small focus groups. As an example, we're working with a group called FlavorWiki. When you go out and buy food, you then give

**“We do significantly less concept testing, and way more direct test-and-learn. That involves putting food out in the marketplace.”**

feedback on that food. So we’re getting much broader input with less granularity.

We’ve set up our internal pilot capabilities so they can produce food for sale, and be FDA compliant and EU compliant. We do significantly less concept testing, and way more direct test-and-learn. That involves putting food out in the marketplace. Right now we’re running a test-and-learn in Europe on a paper liner for a cereal box, with Tesco. That one is running for an eight-week period. Then, we’ll work with them to analyze

the data and understand where we are. It builds stronger relationships.

**Minimizing hand-offs.** We don’t have food scientists and food developers anymore. We have food designers, because of that notion of design being much more integrated. We’ve minimized the number of hand-offs [from one department to another.] People carry the whole project from start to finish. We continue to have some technical specialists — but there a lot more people who have a broader remit to drive against the silos that so easily occur in big companies.

**We asked survey respondents to share new tools, methodologies, and technologies their teams have been using to increase productivity or deliver better results.**

“We regularly use a strategic idea campaign model, where the top ideas compete for funding in a ‘Shark Tank’ like forum. But the most important aspect of the team is that we invest in 60-100 promising (but well-vetted) seedling projects/year.”	Aerospace & Defense
“Connecting with academic centers of excellence and technology providers.”	Chemicals
“We are teaming with external freelancers joining us for longer-term projects (five to ten months).”	Consumer Goods / Consumer Products
“Working closely with venture capitalists.”	Consumer Goods / Consumer Products
“The world’s transition to virtual work has unlocked potential to connect more broadly externally without the time constraints of travel. Some individual areas have realized incredible potential here, but the net benefit is yet to be determined.”	Energy & Utilities
“Internal innovation, by involving other areas to participate, e.g. hackathons, in the idea generation, and being transparent on reporting the stage of their ideas after the internal innovation activity is complete.”	Financial Services
“We have an internal strategic planning process that’s unique to us. We drive decision making to the edge vs centralize. We try to teach leaders and engineers how to be entrepreneurs. Anyone can start a project.”	Industrial Manufacturing



Pete Dulcamara  
Chief Scientist and  
Technical Vice President  
**Kimberly-Clark**

**H**ow we're structured. We've got a Chief Growth Officer and we have a Chief R&D Officer, but the two of them work very closely together. I report to the Chief R&D Officer, who reports to the CEO.

Innovation is this creative collision between what's needed by the consumer, what's required by the business, and what's possible through science and tech technology, and you really got to bring those three things together, so we work very closely.

**Creating virtual prototypes.** Through COVID, we've really increased the amount of virtual R&D that we've done in the computer. It has probably increased by 10X, the amount of virtual prototypes that we build versus physical prototypes. One of the things that we've been working towards is almost generative design thinking – the intersection of generative design with design thinking. We still have the empathetic understanding of what the consumer needs, but rather than building a physical prototype, let's build a virtual prototype first, and get feedback on that before we build our first physical prototype.

The other piece that we've been teeing up is social listening. How do we use natural language processing and social listening to start to understand the needs of the consumer – maybe even before they can articulate it – so we can...put things in front of them that they can react to.

**Sustainability goals.** Our ambition [for] 2030 is to reduce our forest footprint, our plastic footprint, our water footprint, our greenhouse gases all by 50 percent by 2030. We have

## “How do we use natural language processing and social listening to start to understand the needs of the consumer?”

programs [focused] on how we make paper without trees. How do we make plastic without petroleum? How do we make sure that we utilize our water more effectively than we do today? Part of what we've done [is] looked at over 35 species of plants that could potentially replace trees and forest. We've launched a bamboo based bath tissue called Kleenex Eco in Australia, made a hundred percent from bamboo.

**Moving ideas around the world.** I cannot think of a single product or project that we're working on in Kimberly Clark R&D that wasn't done in some partnership with a third party partner, whether that's a supplier or whether that's a university or whether that's a startup. That's just the way you have to do R&D in today's world. I think the bigger challenge, quite frankly, is internal collaboration, and how do we break down silos and actually move ideas across business sectors, regional organizations, across country, across cultures. So that's been a big focus of ours— [ensuring that we have] a global R&D organization that is the connective tissue in the organization to help move ideas around the world, because it doesn't happen naturally.

What are the new pressures or expectations being put on R&D teams? Here's what our survey respondents said.

"COVID has hampered regular customer engagement for 20 months. Talent attrition is also a reality. We have been asked to increase our focus on innovating for cost takeout and defect reduction to ensure our business areas deliver on existing commitments."	Aerospace & Defense
"The external environment has put more pressure on teams to be ambidextrous and support keeping products on the shelf through supply disruption while also continuing build pipelines for the future."	Consumer Goods / Consumer Products
"Continuity of supply. [We] had to quickly qualify a lot of different new vendors and materials due to shortages and force majeure of our previous suppliers."	Packaging
"New org structure creates bottlenecks and slows down innovation. The design was top down in an attempt to do the opposite but internal company experts were not brought in to weigh in."	Retail
"Considering [that 2021] is almost over, I'd say the big team is figuring out how to collaborate remotely. We're developing KPIs around the ability to work together remotely."	Technology
"In order to justify our scouting and discovery activities, we must provide MVPs to the product team on a regular basis."	Technology
"The team is asked to develop new products however, we do not have the time or resources to deliver those new products."	Technology



Ruth Dawson  
Senior Vice President  
**Comcast Labs**

**O**ur recent focus. The trends we've looked at [in 2021] include immersive, augmented reality, and virtual reality. The future of the workplace [is something] which we were looking at already. But clearly, COVID pushed the needle on that. We continue to look at things like sustainability and advanced computing – quantum computing, edge computing. And then ultimately, [we're] looking at leveraging technology for our customers and our employees. Leveraging how we can look a little further out and see how technology can really enhance things for our customers and employees.

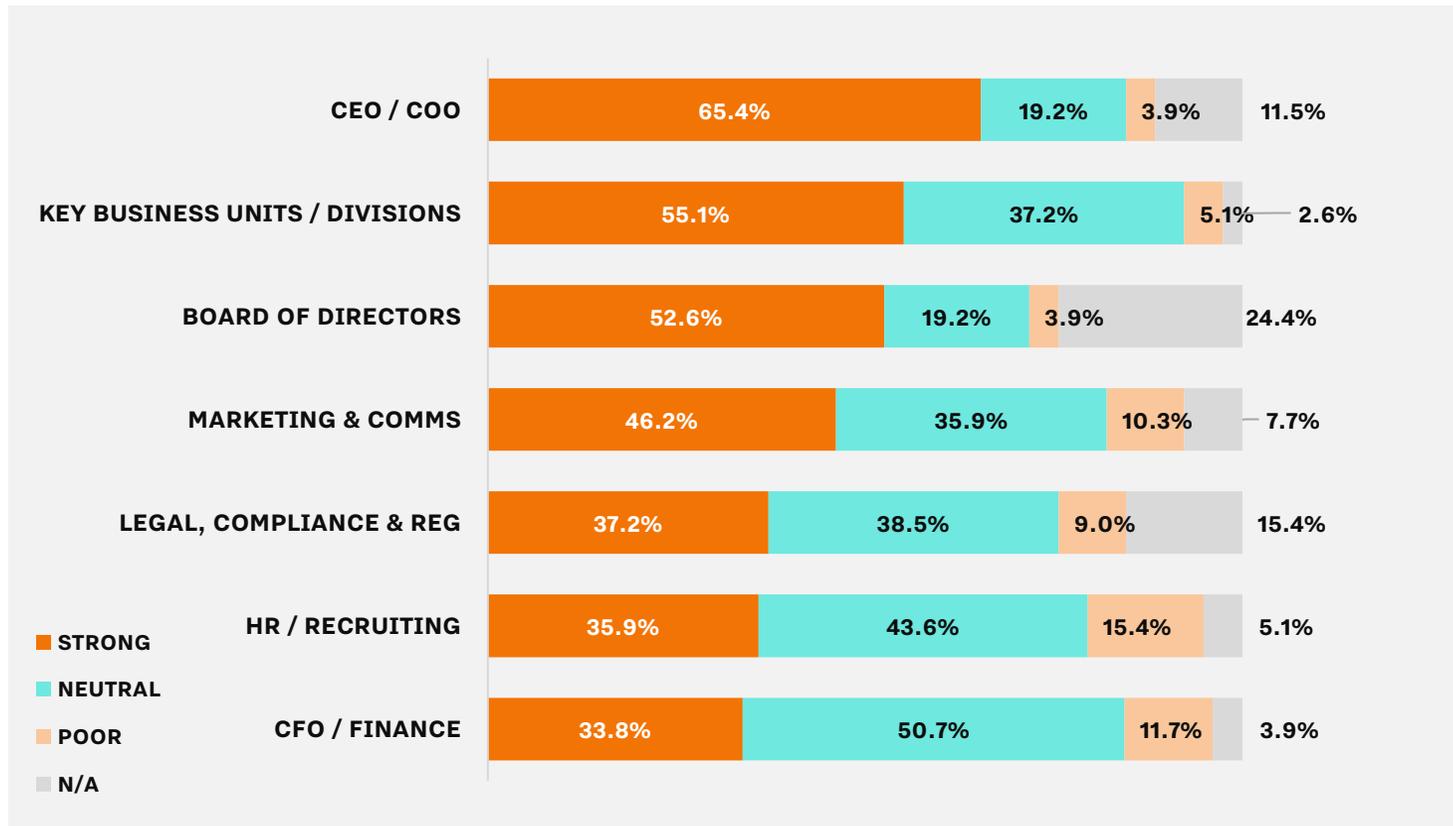
**Changing the 'build vs. buy' balance.** Our industry typically has been more focused on build versus buy historically. I think we've really changed [that], with much more focus on looking at where the technology makes sense. My team does actively look at startups. If there is tech out there with a large company or a startup that we can partner with, or build it, or bring it in and augment it – any combination of that is really what we're looking for.

**Measurements we use.** From a qualitative perspective, I really look at it as anything I experiment with. There are three dispositions for those projects. One is, we vet it and then hand it off to another team for deployment. ...The next is, we validated it, but it's a little too early for the business. So, we'll pause it, we obviously have the learning from what we did, and we'll be ready to hand it off when the time is right. The third one is potentially just stopping it. We do expect out of my team some things that aren't going to be successes. If we haven't done any of those, then we haven't taken enough risks.

**“Our industry typically has been more focused on build versus buy, historically. I think we’ve really changed [that] ... My team does actively look at startups.”**

On the quantitative side, we’re very active in patents. Obviously, you can measure those. Comcast currently has over 2,600 patents in the US, and close to 2,000 patents pending. During the last 10 years, we’ve actually grown the patent portfolio by 13 times.

## How would you describe your level of support from these parts of your organization?



Good news here: survey respondents tell us that their strongest support comes from their CEO, COO, board, and business unit or divisional chiefs.

In the consumer products industry, one respondent said, “Our organization is fairly unified in the belief that R&D is the key to growing the business.”

Note, though, the slices of respondents who say they are not getting sufficient support from colleagues in marketing and communications (perhaps to promote the role R&D has played in developing new products); HR and recruiting (helping to identify and bring in the right talent); and the CFO’s office (approving annual budget increases, or ad hoc project-related expenditures.)

Comments about support appear on the following page.

## Generally Strong Support

“Our company sets lots of growth and stability goals based on innovation, therefore, there is mostly strong support for R&D throughout the whole organization.”

“There is realization from our corporate functions that our industry is facing a landscape change when it comes to energy, and that incremental movements won’t answer our needs or the needs of our customers. Our key leaders and leadership functions realize that their strong support will be necessary, and they have subsequently provided that support.”

“The CEO and Board understand that if we don’t invest in innovation we die. Legal is supporting the CEO. Marketing believes innovation is the key to driving Net Promoter Score and brand equity metrics.”

## Mixed Support

“The CEO is making a strong push for a digital extension of our core business. Business units have the luxury of high orders in our core business. The CFO has strong personal buy-in to the corporate strategy. HR did not understand why new employees with a digital background might not fit in historical structures. Marketing is making a strong push for the new products.”

“Recognition of market changes makes the CEO and board support strong. Finance teams are looking for strong IRR and NPV returns, given high demand on capital across the org.”

“CEO has clear focus areas of high support. Other business units have different views on what is important. HR has almost non-aligned policies and approaches...”

“Legal & Compliance are seen as an administrative burden by business teams; they don’t move as fast as expected.”

“Board is looking at competitive spaces; Legal/regulatory is nervous; HR loves looking at great talent, and innovation professionals tend to be on the forward curve; Marketing/communications needs more stories to define the marketplace.”

“It’s sad, but ‘I don’t do experiments’ is a common vision of R&D by those that don’t understand the essential need for R&D.”

“The support is poor with some of the company teams, because they don’t even have communication with the innovation team.”

“We do not use HR or the recruiting team; we do our own hiring, due to past poor experiences.”

## **Generally Poor Support**

“Prevalence of short-term objectives.”



Judi Mondello  
Vice President of R&D  
**Campbell Soup Company**

**Virtual versus in-person.** For R&D, as collaborative as we are, it's just better to be in the office. But I would tell you that we've made it work over the last two years by just using all the tools. We hired some folks during the pandemic, and we did some virtual training [using Microsoft's HoloLens augmented reality glasses]; so it's almost like they're in the lab themselves. We're using Mural, we're using Microsoft Teams.

**Testing new concepts with direct-to-consumer sales.** If you think about e-commerce and direct to consumer ... companies are doing a six-month launch of a new item, and it's only direct-to-consumer. They're getting feedback, and then they're going to go to a national retail launch later. So that's a model that we're seeing pop up as well.

**Working with universities.** One of the things that I've led [at Smucker's and now at Campbell's] is a student-led innovation program where we give them a challenge. They do a ton of qualitative work, and they come back to us with some ideas and concepts and really great insights. What I love about the program is that we get direct, unfiltered feedback from Millennials and Gen Z, and I have found that to be extremely valuable. That is a program called OnRamp at Ohio State University.

I've been in R&D for 30 years. Those long-term commitments [to academic research labs], they're not there anymore from what I've seen. You can't make a long-term commitment in this type of volatile situation that we're in. So typically, we'll see one to three year [funding

## “I think the big challenge will be, how do you drive growth beyond the core?”

programs], and that’s fine. But anything beyond a three-year commitment, in my opinion, gets scrutinized because we don’t know what’s going to happen after three years. If it’s transformational technology, that’s different. Working with universities still happens, however, we have various external partners who can meet closer-in versus further-out new technology or new product needs.

**What the C-suite wants.** It’s net sales, right? It’s growth, and that’s what we deliver. That’s pretty standard across the food industry, and I would say across all industries — it’s some sort of competitive advantage and growth through innovation.

From a talent perspective, it’s continuing to build technical talent as well as business acumen. [The C-suite expects us to know] what are the macro trends, and what’s going on externally. [We have] a really strong technical organization that understands more than just the science and the technology behind our products, but the bigger picture, and is partnering with our marketing teams to understand future vision.

I think the big challenge will be, how do you drive growth beyond the core — because it’s expensive to go outside of your core business and drive growth in a meaningful way.

What advice would our survey respondents offer to their peers? Here's a selection of responses, categorized by industry.



## Aerospace & Defense

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“If you are charged with innovation, truly listen to your customers and really focus on their ‘problems to be solved’ versus your ‘existing products to be sold.’ If you truly focus on your customer’s hardest challenges, you will find an opportunity that can be monetized (eventually). Compose the right solution to solve their problem — which is often not YOUR solution. You need to be as passionate about potential solutions offered by others as you are about internal team solutions. Finally, ensure your team has adequate seed fund-

ing and invest after a prudent vetting of the new concepts. No new idea can survive the bright light of a murder board; new ideas are imperfect. Just get the team started, give them space to learn, and coach them in identifying how to better align their concept and lines of investigation.”

“Try to be more collaborative with industry counterparts, rather than seeing them as competition.”



## Consumer Goods / Products

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“Create teams mixing people with different skills at earlier stages. For example, engineers+marketing+designers.”

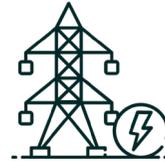
“Alignment with top leaders is key. Backing at the CEO and Board level is critical to get funding for innovation growth.”

“Keep pushing forward with your vision, while also meeting your colleagues where they are (acknowledging their challenges and constraints).”

“Keep in mind the healthy tension between developing the best tech possible, and delivering the experiences that customers want.”

“Focus on revenue generation and goodwill generation for your organization with your work.”

“Manage uncertainty early and regularly. Don’t let it manage your outcomes.”



## Energy & Utilities

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“Identify the bottlenecks and interface issues in the organization. Resolve the bottlenecks and focus on the interfaces by involving yourself as CTO or project leader in identifying the issues and resolving [them] by personal communication (even though this can be tough in pandemic times).”

“Great ideas are very likely buried under layers of bureaucracy at many organizations. Management likely has strong connections with management at external partners, but front-line employees engage on a completely different dimension, and will be exposed to problems and solutions that management won’t see. Empower employees of all seniority and responsibility levels to contribute to new idea generation.”



## Engineering & Construction

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“You have to find a way to get strategic goals set from above. Those then have to be objectives for each part of the organization that participates. Otherwise, you’re fishing in the dark without the support to be successful if you do hook something with potential.”

“Identify goals, reward performance.”



## Health Care

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“If the org does not have a clear process or roadmap, you need to assess how or if your continued participation will generate value to the org, or return value to your career.”



## Industrial Manufacturing

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“Develop a lens to learn how to think about product and ideas and filtering things. This is about learning how to become an entrepreneur.”

“Stay patient and persistent.”



## Financial Services

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“Invest in focused, dedicated R&D and innovation efforts outside the core business, in order to truly accelerate product-specific efforts and longer-term shifts in cultural and operational change management.”

“Keep in touch with other areas...to identify latent potential opportunities.”

“Leadership sponsorship and business stakeholder engagement are keys. Tying innovation efforts to corporate strategy and goals also helps drive value-oriented results.”



## Medical Devices & Instruments

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“Look outside your four walls, effectively engage with early-stage companies, and identify innovators to partner with in the academic spaces.”



## Nonprofit

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“Small wins create momentum, which in turn provide more resources to tackle the big opportunities.”



## Technology

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“To build a network, inside and outside your company, to develop projects, it is better and easier to work with people who believes in innovation, than convince someone who does not believe.”

“Keep your teams small and focused with processes that meet the size and temperament of the team. Don’t try to make everything uniform across the board.”

“Focus on failing fast. Look broadly, but eliminate the losers as quick as possible.”

“Innovation can come from anywhere in the org. It is the leader’s job to select and support it.”



Jeff George  
Senior Vice President of R&D  
**Hain Celestial Group**

**Growing through acquisitions.** Hain as a company in the food business is relatively young. We've been around 25 years. We grew primarily for the first 20 years through acquisitions. What generally happened is R&D departments came to the company via acquisitions. A small company would have a couple folks in R&D, they'd get acquired, and become part of Hain R&D. But Hain R&D as a total function operated very independently and siloed. So those folks who came with the acquisitions kind of stayed working on their businesses until our transformation, which was about three years ago. We put all of those groups together into one North American organization.

In R&D, we need to be very focused, [and make] fast decisions focused on growing margins, focused on delivering targeted profitable innovation. We didn't need bureaucratic structure. We designed our group that way. I think it mimics more what a lean startup company would do, versus perhaps a larger, more established company.

**Hiring and retention.** The hiring environment and retention environment is as challenging as I've ever seen it in my entire career. ... Now, people care much more about the company, the ethics of the company and how committed you are to the environment and sustainability and how committed you are to growing people's careers and people's lives.

... You can't just sort of pay people and have them come. You really have to mesh and match people's values and beliefs.

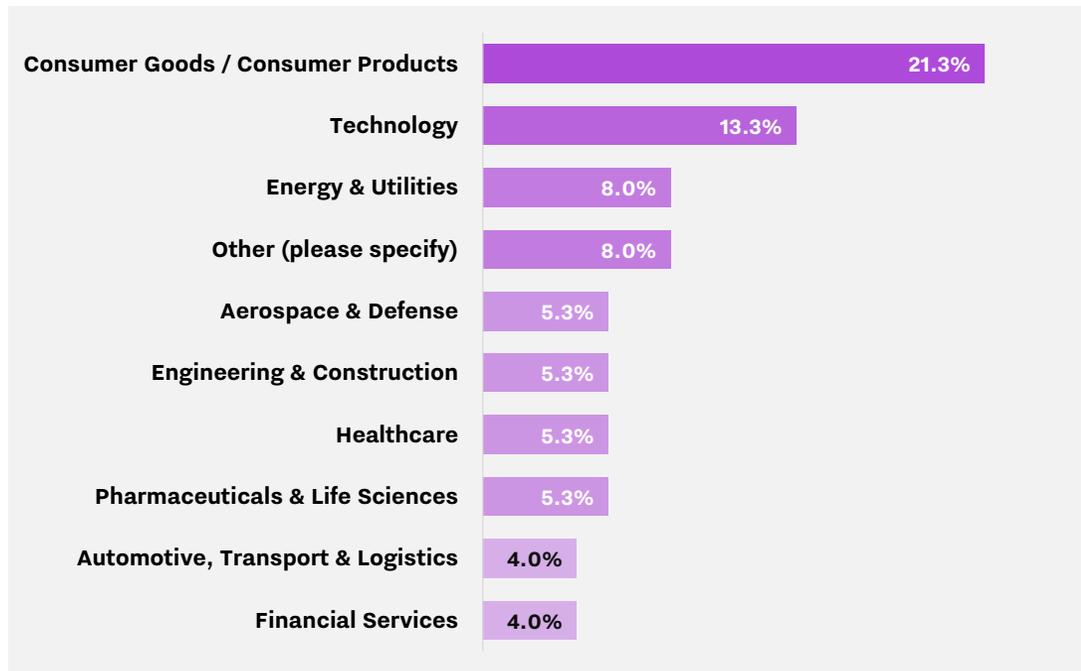
**“... You can’t just pay people and have them come. You really have to mesh and match people’s values and beliefs.”**

**Outside partners.** We have a third-party partner called Pack Edge. Their expertise is in packaging, packaging design, and packaging research and development. When I joined Hain, we didn’t have that function at all. That’s a very important function because it helps deliver differentiated structural packages; it helps ensure product safety; it drives a potential for cost savings. To build a function like that internally takes a very long time. ...You have to build the talent, systems, and infrastructure. ...[This is] almost like ‘Dial-an-Expert.’

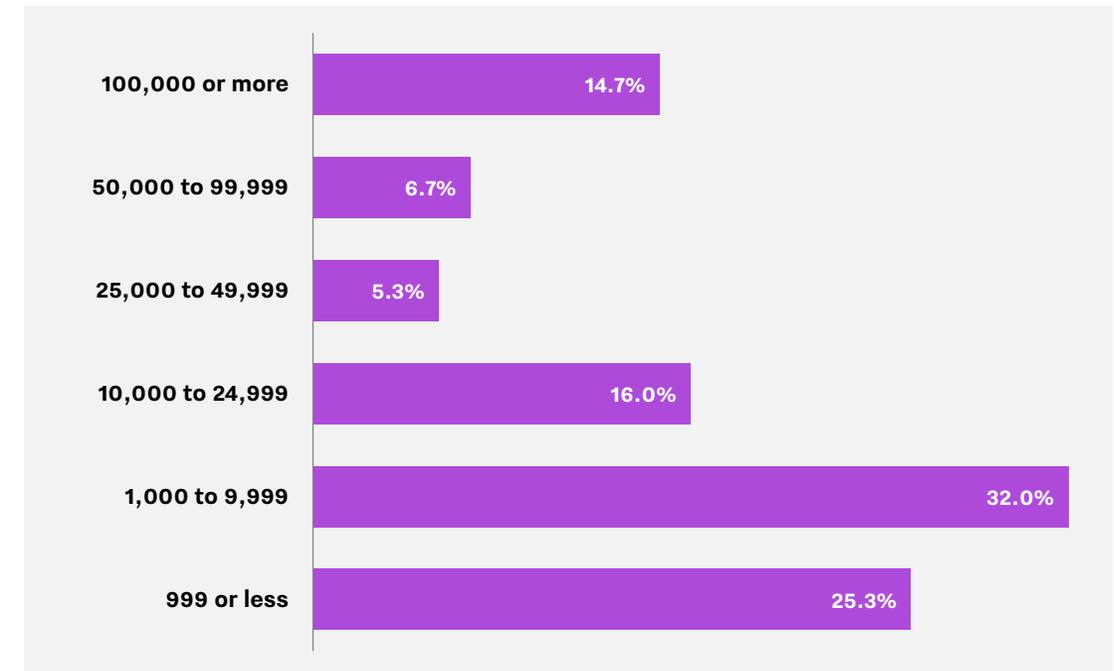
**Metrics.** The way we measure R&D progress, [our] contribution to growth, and the effect of this department is really three-fold: our contribution to innovation, cost savings, [and also] productivity and culture and employee engagement.

We have targeted numbers of the amount of products we launch each year, and the amount of total sales that come from innovation. With cost savings, we have annual productivity targets. R&D plays a huge role in redesigning the ingredients, the products, and the packaging so that they deliver against cost savings which ultimately improve our profitability. But it also helps us deliver value to consumers. ... We want to keep our products affordable to more people. [We’re doing] everything we can to drive efficiency, so we can keep the price down and the value good for consumers.

## What is your organization's primary industry?\*

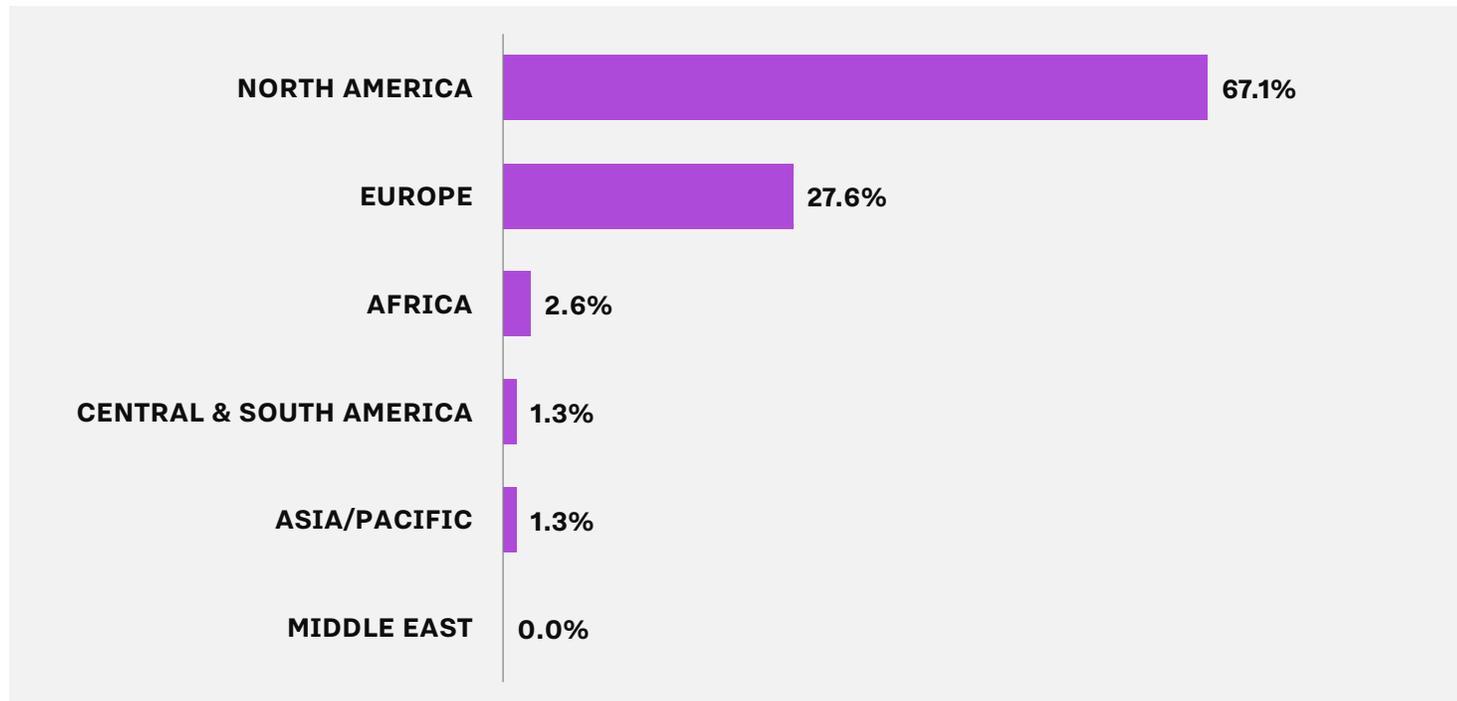


## How many employees are in your organization?

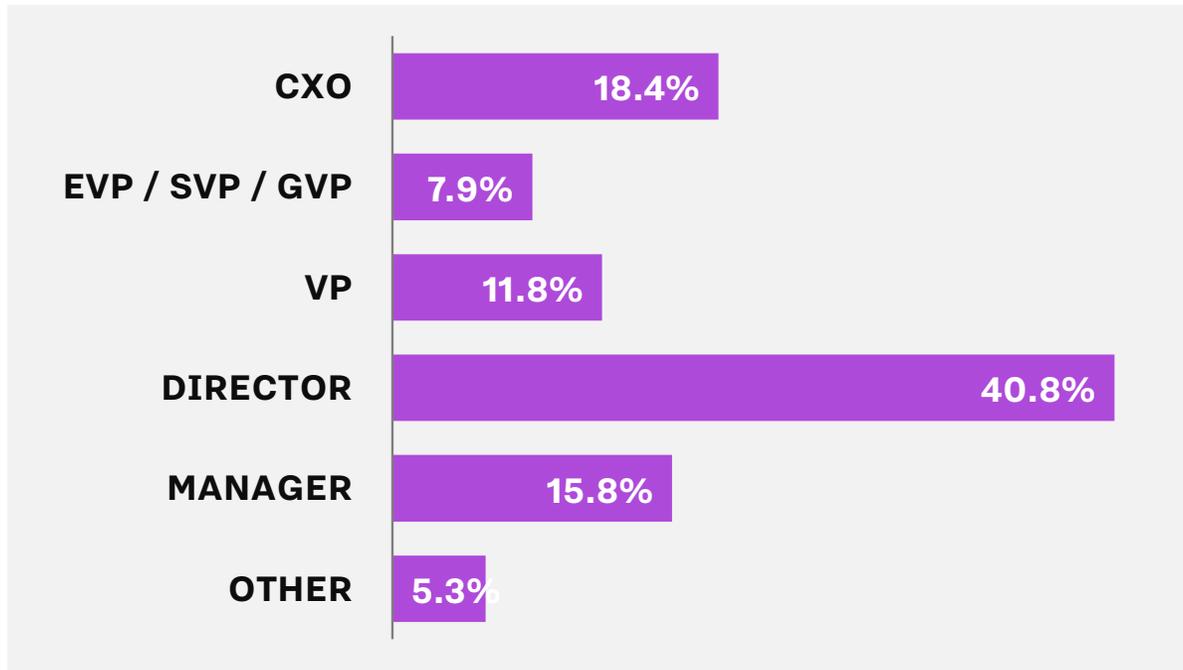


\* These are the top 10 answers from our respondent set.

## Where is your organization headquartered?



What is your level of seniority?



## About Wazoku, Our Research Sponsor

At Wazoku, we offer a unique enterprise solution for innovation. The Wazoku Platform is your one-stop shop for Agile Innovation Management (AIM), empowering innovation at scale across your organization as your Innovation Operating System (Innovation OS).

Whilst 45 percent of respondents in this survey say they regularly conduct open innovation challenges, there is so much more opportunity for embracing an approach that studies have shown to be three to five times more effective, and eight to ten times cheaper than traditional approaches. Wazoku clients such as A2A and Enel have successfully used this approach to solve significant business challenges and accelerate transformational programs in the last year.

Our global clients, such as HSBC, Sandvik, and many others are accessing on-demand research, open innovation, tech-scouting and open talent, empowering internal innovation, co-creation and open innovation through our AIM platform.

Learn more about Wazoku, or book a demo, at [wazoku.com](https://wazoku.com).

The logo for Wazoku, featuring the word "wazoku" in a lowercase, sans-serif font. The letters "w", "a", "z", and "o" are dark blue, while the letters "k" and "u" are a light green color.

## About InnoLead Research

InnoLead is the world's largest network of executives responsible for strategy, R&D, new product development, design, and innovation in established organizations. We connect those executives through online and in-person events, and we supply information and guidance on our website – all focused on helping them to build competitive advantage.

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